YAAK NUTRIENTS TMDL PROJECT

Watershed Advisory Group Presentation

April 10, 2014 – Yaak, MT

Presentation Outline

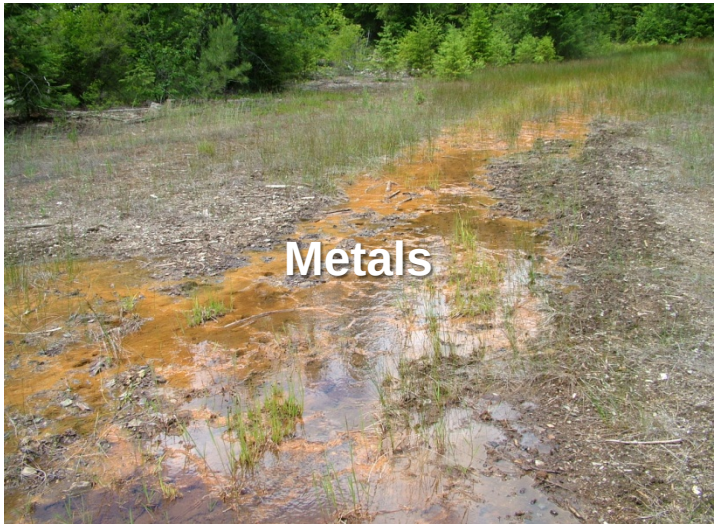
- Introduction to TMDLs
- The East Fork Yaak Nutrient TMDL Project
- Project Schedule and Wrap-Up

What is a TMDL?

- A TMDL (or Total Maximum Daily Load) is a calculation of the maximum amount of a pollutant (nutrients, sediment, etc.) that a waterbody can receive from all sources and still meet water quality standards

- Montana State Law and the Federal Clean Water Act require that a TMDL be developed for all waterbodies impaired by a pollutant

Types of Pollutants



Water Quality Standards

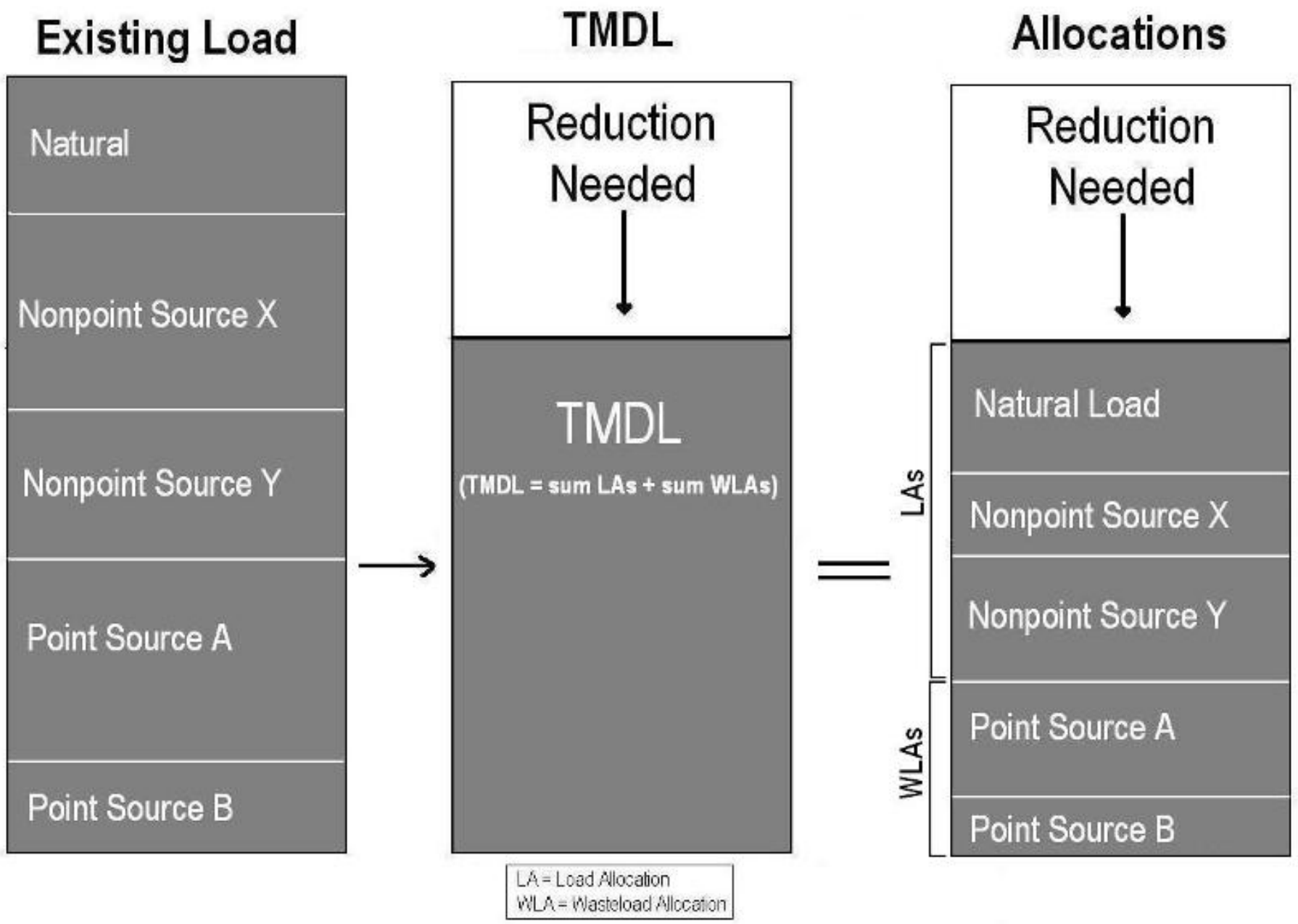
- Can be numeric or narrative and are designed to protect beneficial uses of a waterbody
- Some examples of beneficial uses are: aquatic life, primary and secondary contact recreation, drinking water supply, agricultural water supply, etc.
- Beneficial uses are based on specific waterbody classifications (A-1, B-1, etc.)

Monitoring and Assessment

- DEQ uses monitoring data to assess water quality and compare to applicable water quality standards
- If the data show a water quality problem, the waterbody is put on a list of impaired waters, also known as the 303(d) list
- Waterbodies impaired by a pollutant will require a TMDL to be developed for that particular waterbody-pollutant combination

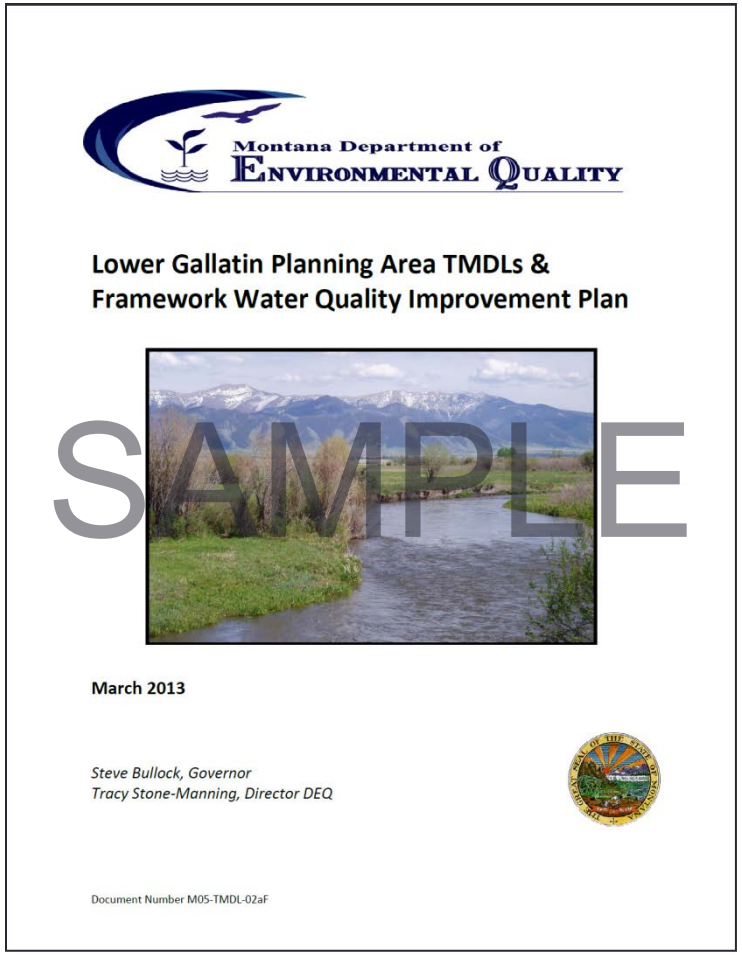
Steps for Developing a TMDL

- Characterize the impaired waterbody's existing water quality conditions and compare those conditions to Montana's water quality standards.
- Quantify the magnitude of the pollutant contribution from each significant source
- Determine the total allowable load of the pollutant to the waterbody
- Allocate the total allowable pollutant load into individual loads for each significant source (referred to as load allocations for nonpoint sources and wasteload allocations for point sources)


Existing Load
Natural
Nonpoint Source X
Nonpoint Source Y
Point Source A
Point Source B
TMDL
Reduction Needed
TMDL
(TMDL = sum LAs + sum WLAs)
LA = Load Allocation
WLA = Wasteload Allocation
Allocations
Reduction Needed
Natural Load
Nonpoint Source X
Nonpoint Source Y
Point Source A
Point Source B
LAs
WLAs

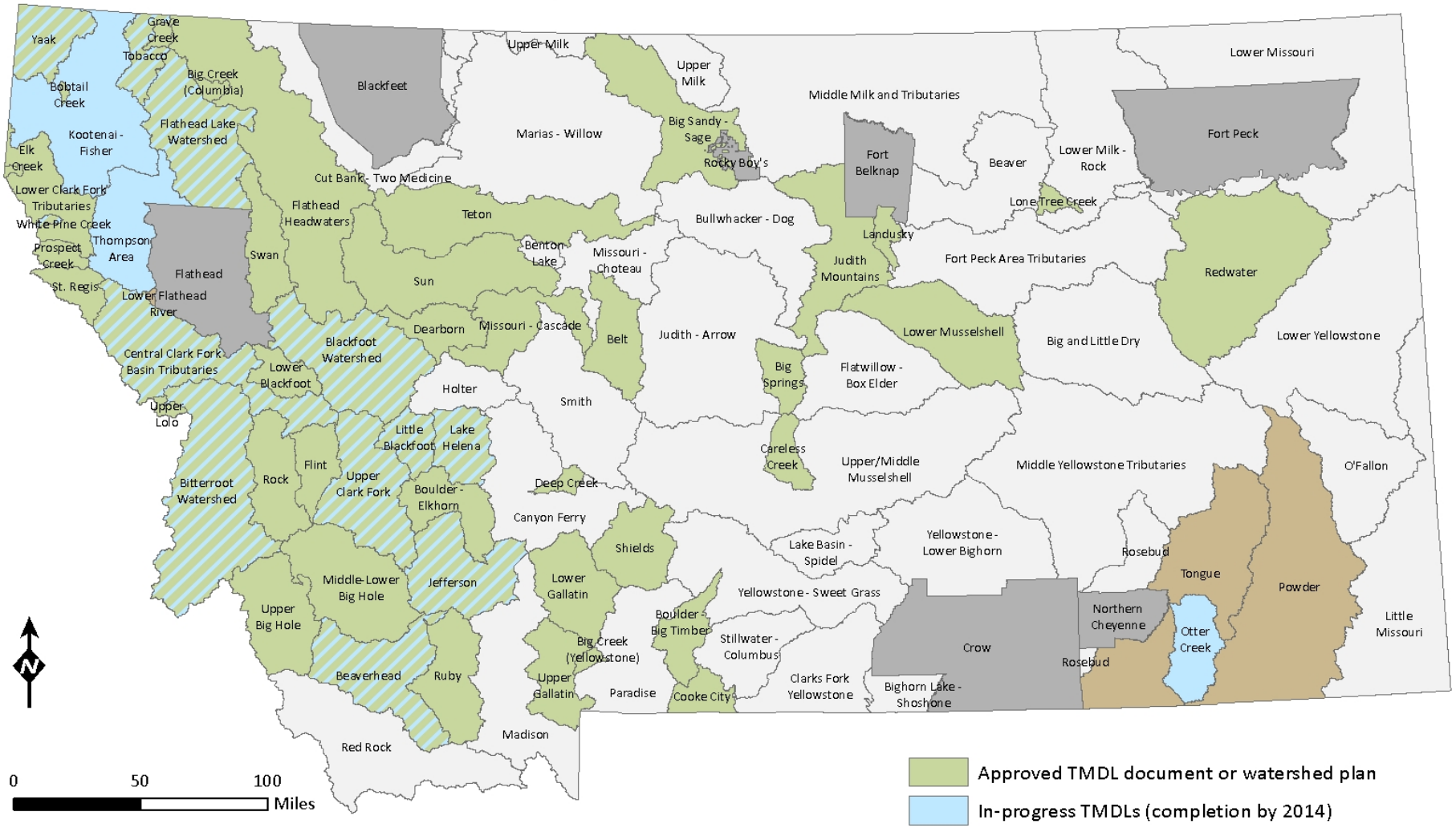
Montana TMDL History

- More than 1,000 approved TMDLs (1998 – present)
- More than 50 TMDL documents completed as of December 2013
- Completed documents can be found at:



http://deq.mt.gov/wqinfo/TMDL/finalReports.mcpx

Montana TMDL Project Areas & 2014 TMDL Completion Schedule



Approved TMDL document or watershed plan

In-progress TMDLs (completion by 2014)

Combination approved & in-progress TMDLs

Additional TMDL priority areas (completion after 2014)

Not included in 2014 schedule

Tribal (not under state jurisdiction)

TMDLs are specific to a waterbody segment - pollutant combination. Some planning areas with completed TMDLs may still require TMDL development for additional waterbody - pollutant combinations. Contact the DEQ at 406-444-5317 or refer to the final TMDL documents at http://deq.mt.gov/wqinfo/TMDL/finalReports.mcpx for additional details.

In addition to the watersheds shown on this map, some large rivers and their associated reservoir systems represent separate TMDL project areas. These include the Clark Fork River, the Missouri River, and the Yellowstone River. Pre-TMDL development support work is underway in the Yellowstone River and Missouri River, while the Clark Fork River has a combination of approved and in-progress TMDLs.

Map updated 12/30/2013

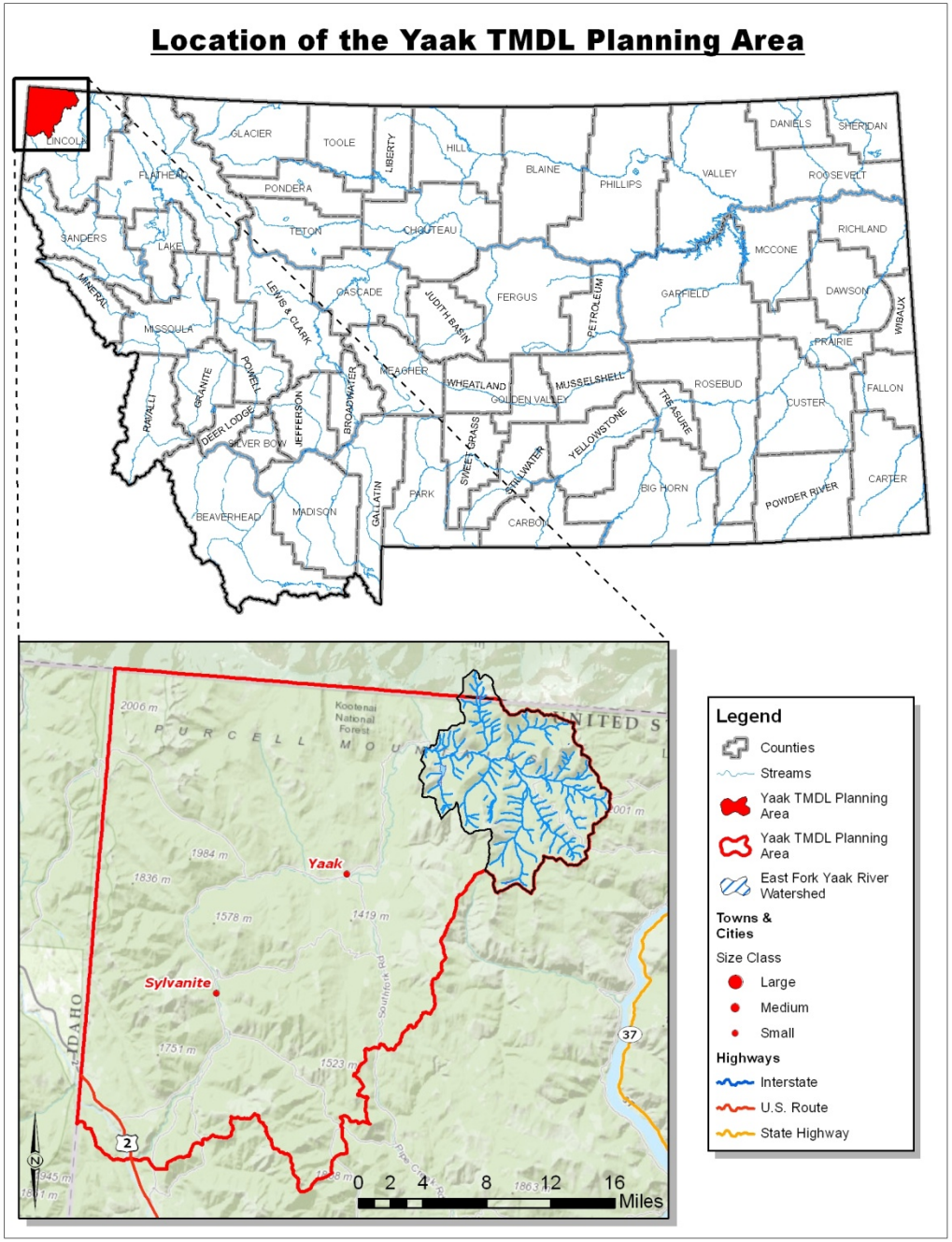
Watershed Advisory Groups (WAGs)

- Watershed Advisory Groups are formed to provide stakeholder input on TMDLs under development
- WAGs are comprised of diverse land users throughout the TMDL planning area and can provide valuable information about the watershed

Yaak Nutrient TMDLs Project

- In the 2012, 303(d)/305(b) Integrated Report, there were six waterbodies in the Yaak River watershed that were listed as impaired due to nutrients.

- Through additional sampling and reassessment five of these waterbodies were determined to no longer be impaired for nutrients and were delisted in the Draft 2014 Integrated Report



Northern Rockies Targets

Parameter	Northern Rockies Level III Ecoregion Target Value
Nitrate+Nitrite (NO_3+NO_2)	≤ 0.10 mg/L
Total Nitrogen (TN)	≤ 0.275 mg/L
Total Phosphorus (TP)	≤ 0.025 mg/L
Chlorophyll-*a*	≤ 125 mg/m2
Ash Free Dry Mass (AFDM)	≤ 35 g/m2
Hilsenhoff's Biotic Index (HBI)	< 4.0
Periphyton	< 51%

- Combination of water chemistry and biometric thresholds

2012, 303(d) list

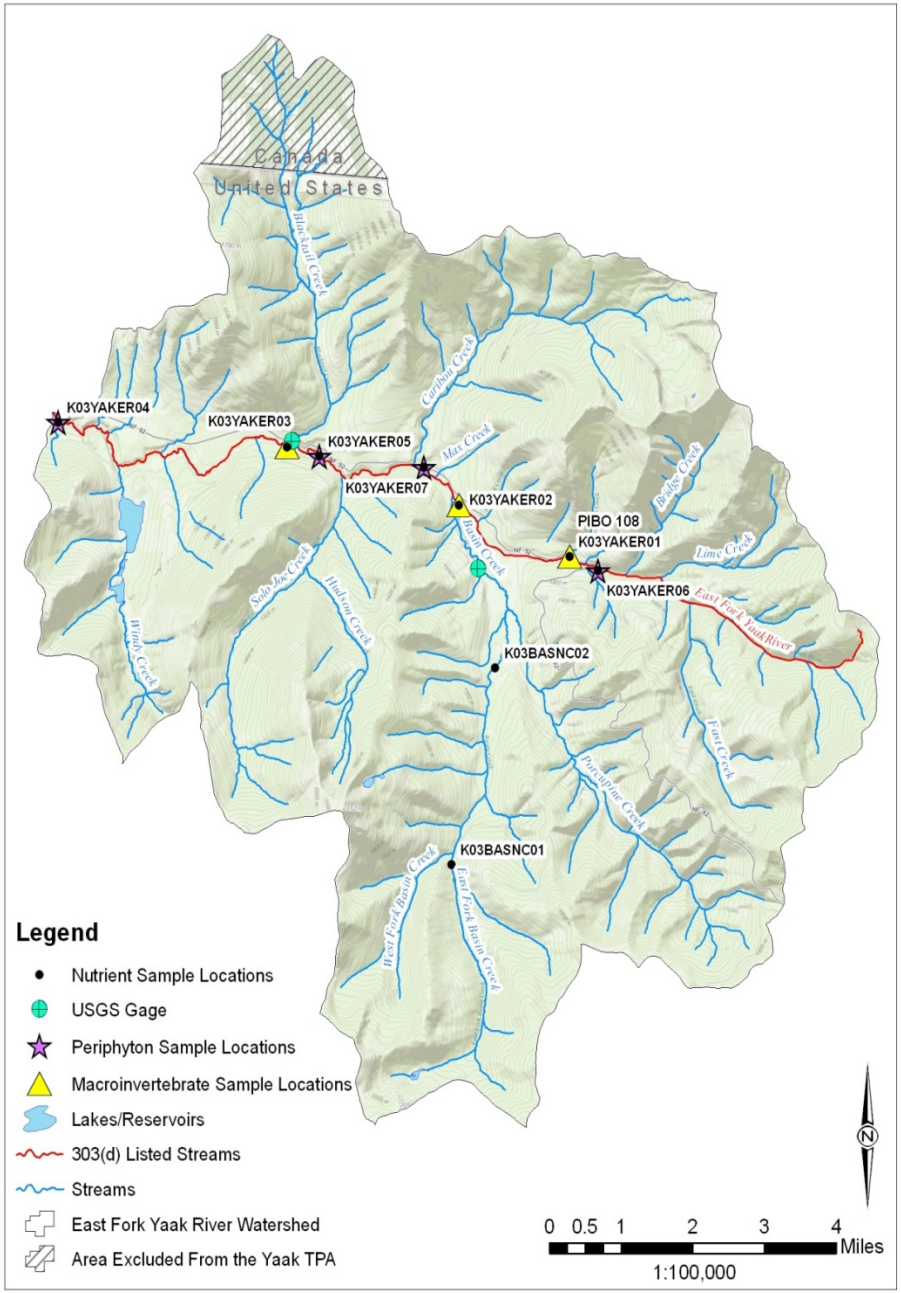
AU_ID	Waterbody name	Cause name	Cycle first listed
MT76B002_100	East Fork Yaak River	Nitrate/nitrite	2006
MT76B002_020	Lap Creek	Nitrate/nitrite	2006
MT76B002_070	Pete Creek	Nitrate/nitrite	2006
MT76B002_010	Seventeen Mile Creek	Nitrate/nitrite	2006
MT76B002_060	Spread Creek	Nitrate/nitrite	2010
MT76B002_090	West Fork Yaak River	Nitrate/nitrite	2006

Draft 2014, 303(d) list

AU_ID	Waterbody name	Cause name	Cycle first listed
MT76B002_100	East Fork Yaak River	Nitrate/nitrite	2006

East Fork Yaak River

- All water chemistry data were below the nutrient targets
- Biometric criteria (ash-free dry mass and periphyton) exceeded target thresholds
- Conclusion: East Fork Yaak River is nutrient impaired



2014 Assessment

- Nearly all water chemistry samples were non-detect
- Two periphyton exceedances (K03YAKER04, K03YAKER05)
- One AFDM exceedance (K03YAKER07)
  - All downstream of Basin Creek confluence

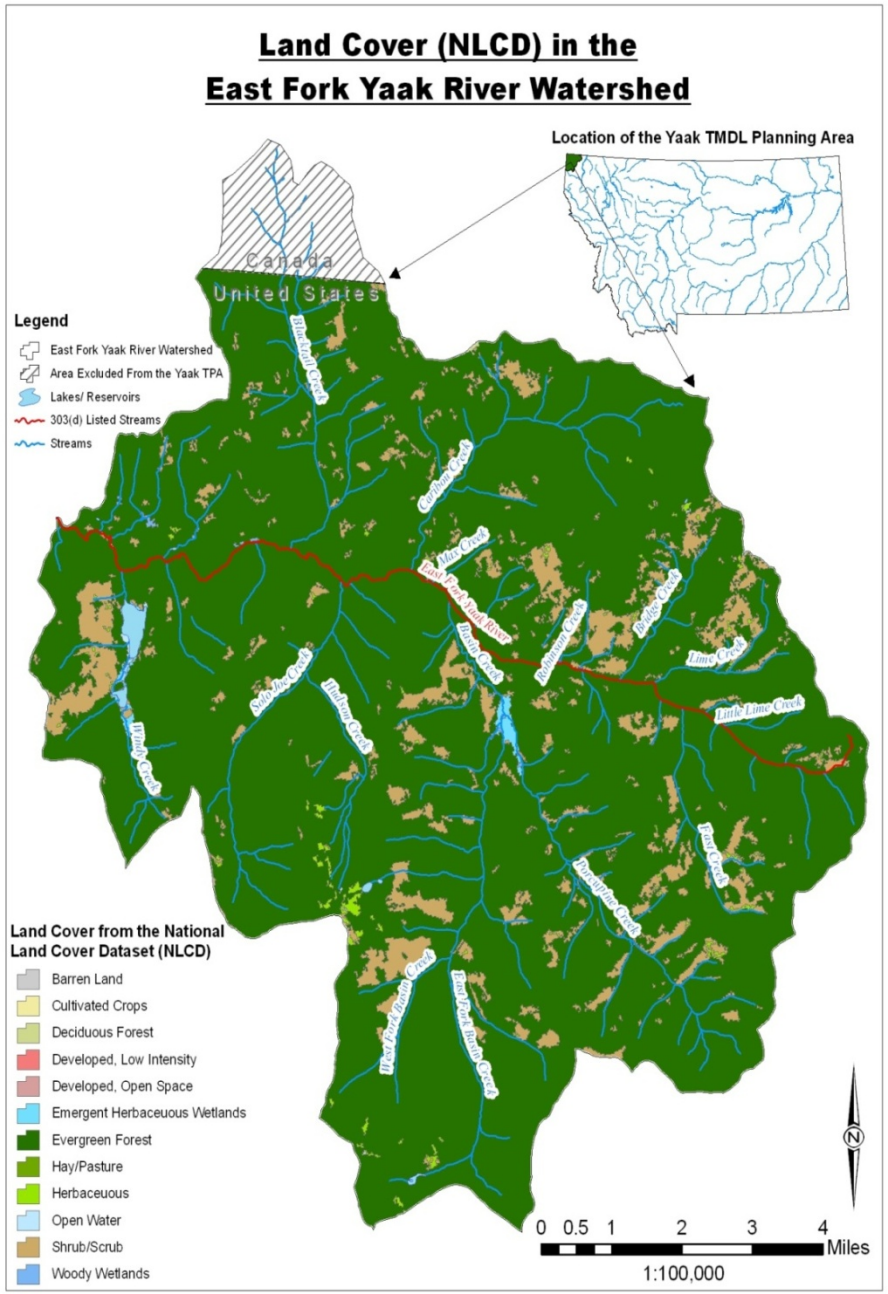
Nutrient	Sample Size	Target Value (mg/L)	Target Exceed-ances	Binomial Test Result	T-test Result	Chl-*a* Test Result	AFDM Test Result	Macro Test Result	Peri-phyton
NO_3+NO_2	15	0.10	0	PASS	PASS	PASS	FAIL	PASS	FAIL
TN	12	0.275	0	PASS	PASS				
TP	15	0.025	0	PASS	PASS				

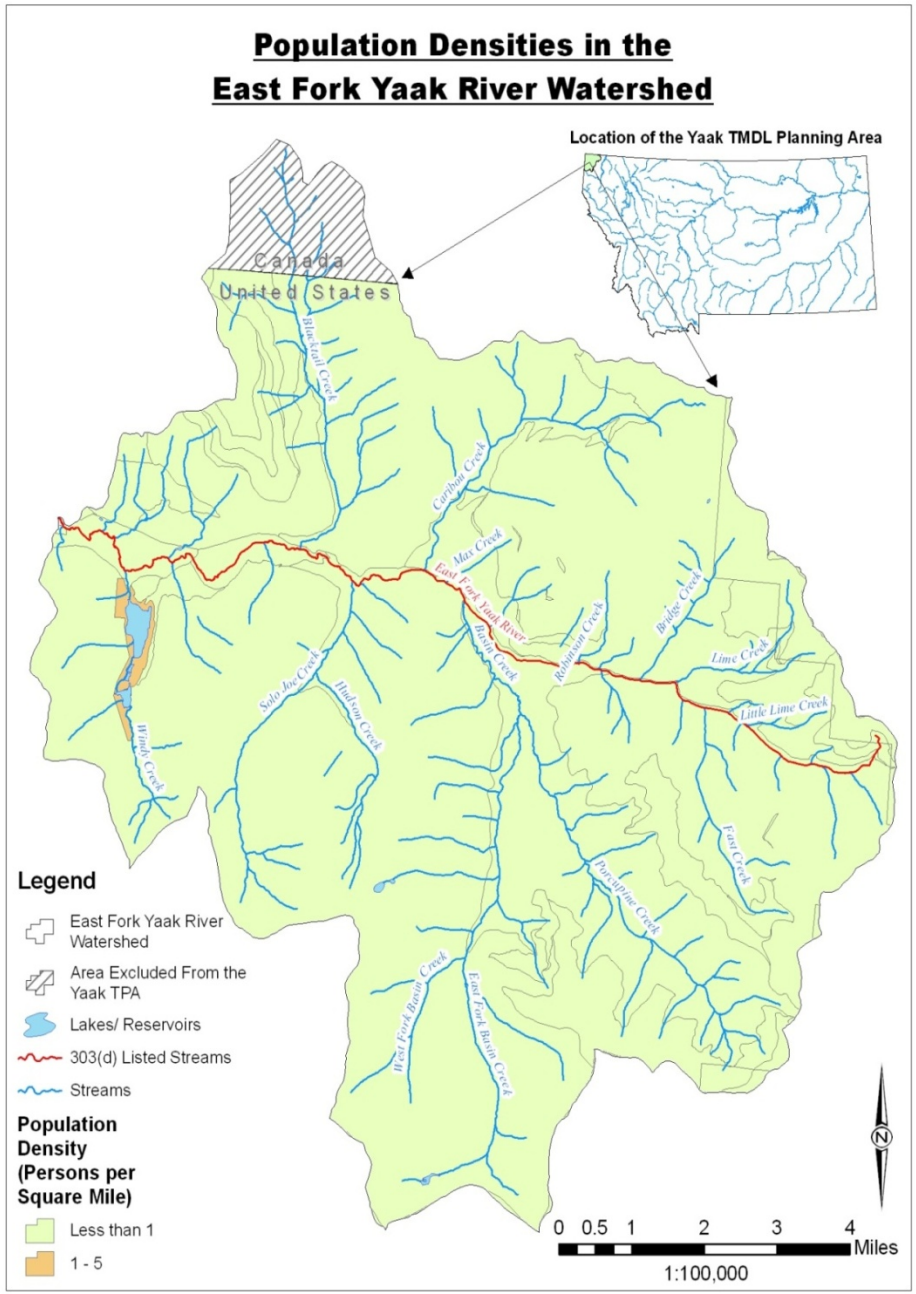
AFDM, K03YAKER07, 8/29/2012

Source assessment

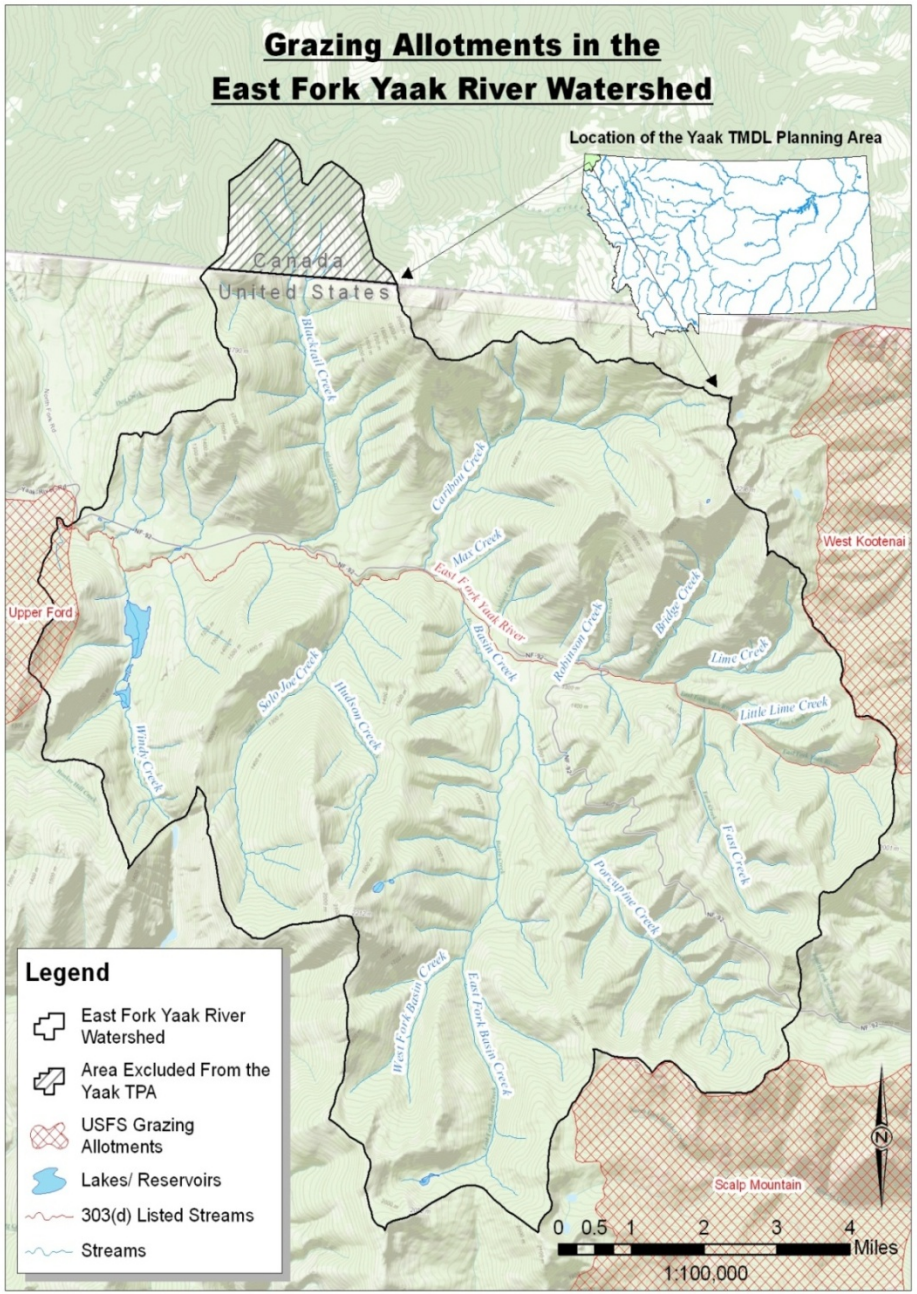
- Timber
- Grazing
- Recreation

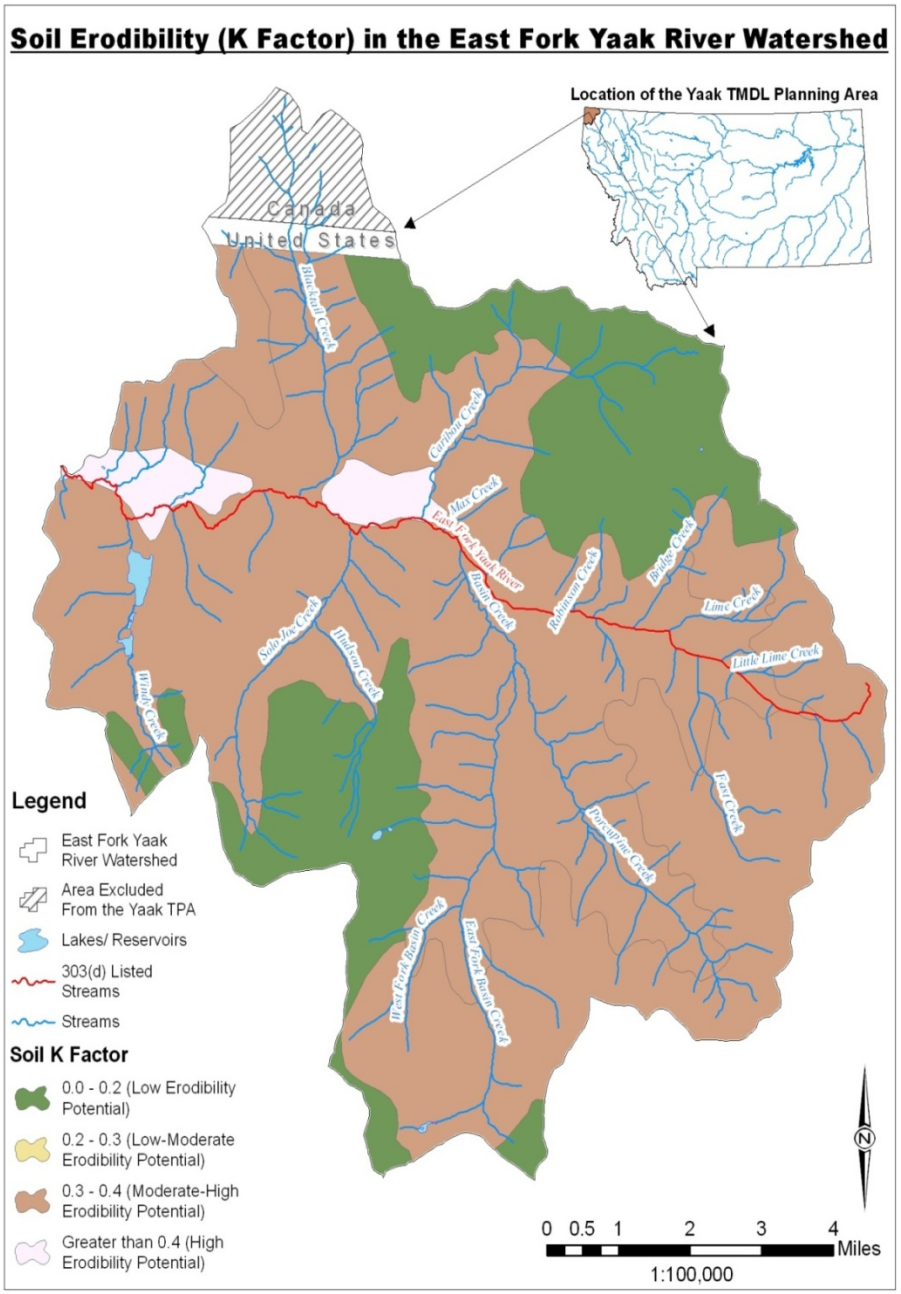
Source assessment



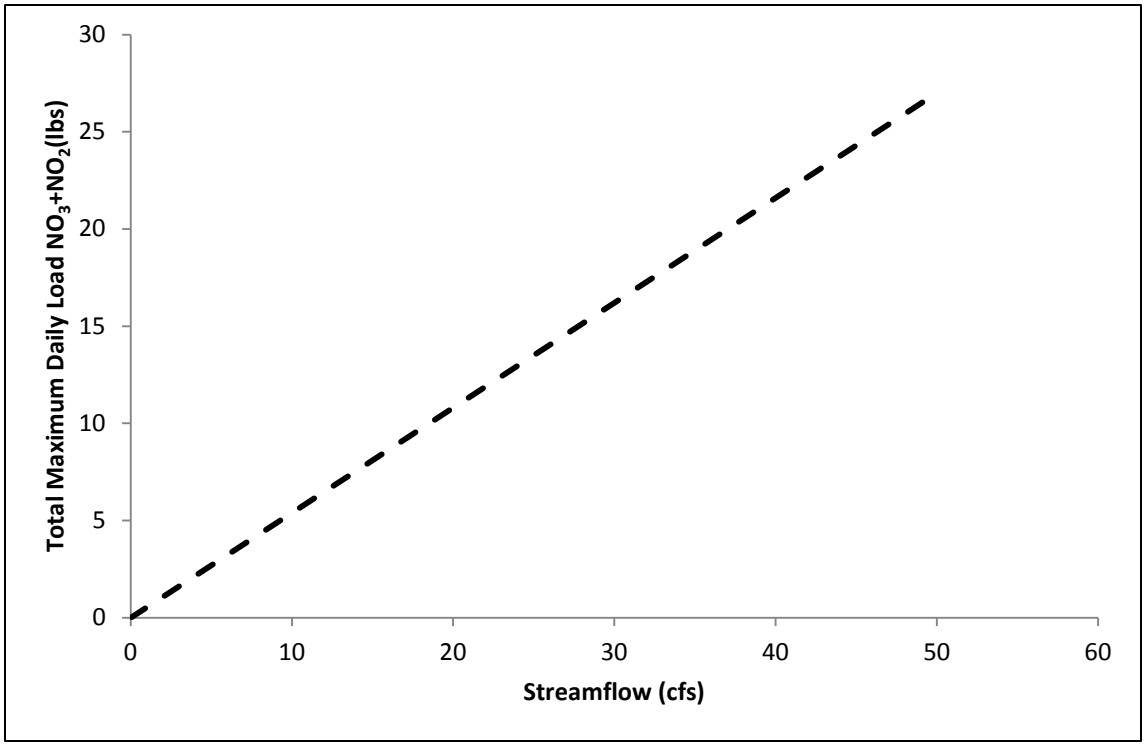


Source assessment





How TMDLs are expressed



- **Equation 5-1*: TMDL (lbs/day) = (X) (Y) (k)***
- *X = water quality target in mg/L (NO_3+NO_2 = 0.1 mg/L)*
- *Y = streamflow in cubic feet per second (cfs)*
- *k = conversion factor of 5.4*

East Fork Yaak River NO_3+NO_2 TMDL

Example NO_3+NO_2 TMDL for East Fork Yaak River

Allocation	Source Category	Current Load (lbs/day)[1]	% Reduction	Allocation (lbs/day)	Rationale/Assumptions[1]
Load Allocation	Natural Background	1.38	0%	1.38	Assumes a natural background concentration of 0.009 mg/L NO_3+NO_2, which is the median NO_3+NO_2 concentration from the reference dataset for the Northern Rockies ecoregion
	Mining, Timber Harvest, Grazing, and Other Human Sources	6.28	0%	13.93	Assumes a concentration of 0.05 minus natural background (0.009) for an estimated instream concentration of 0.041.
TMDL	All Sources	7.66	0%	15.31	

[1]Based on a detection limit for samples and the median flow of 28.35 cfs (n=10) for samples collected downstream of the Basin Creek confluence; all samples in this reach were non-detect for NO_3+NO_2 but this reach includes the sites where biometric criteria were exceeded ; the TMDL is based on the NO_3+NO_2 target of 0.100 mg/L.

Project Schedule

- Draft TMDL document is currently available online
- WAG review and comment on the draft document by Friday April 25th
- 30 day public comment period on draft TMDL document with a public meeting in early May
- Final document expected to be complete by late May-June 2014 for submittal to EPA for approval

What to Expect from a Completed TMDL?

- A completed TMDL provides information on water quality problems and strategies to reduce pollutants by changing land and water management activities
- A Watershed Restoration Plan (WRP) is developed by stakeholders to implement the goals of the TMDL
- Ultimate goal of the TMDLs is to protect water quality

TMDL Project Website and DEQ Website

- Specific TMDL information can be found online at the Montana DEQ TMDL Project Website:
  - http://montanatmdlflathead.pbworks.com/
- General DEQ information, water quality information, rules and regulations, and public comment opportunities can be found on the DEQ website at:
  - http://deq.mt.gov/default.mcpx

TMDL Home

last edited by Christina Staten 2 days, 22 hours ago Page history

Montana Department of Environmental Quality

Welcome to the Montana Department of Environmental Quality's Wiki for Total Maximum Daily Load (TMDL) Development Projects

This site contains pages dedicated to TMDLs that are under development in the state of Montana. You will find quick links to active TMDL projects in the sidebar to the right and in the table below. Note that not all TMDL projects have information on this site. A full list of current TMDL projects, and corresponding contact information, can be found on DEQ's TMDLs Under Development web page.

CURRENT TMDL PROJECTS				
Beaverhead	Blackfoot Watershed	Flathead	Thompson	Yaak
Beaverhead –Jefferson Rivers Temperature	Central Clark Fork Tributaries	Kootenai – Fisher	Upper Clark Fork Phase 2	
Bitterroot	Clark Fork River – Silver Bow Creek Metals	Otter Creek	Upper Jefferson	

COMPLETED TMDL PROJECTS
Pages from previous projects that have been completed and have approved documents are still available and can be found on the **Completed Projects** page

For full information about DEQ's TMDL program, including an overview of the TMDL process, TMDL staff contacts, public comment & public meeting information, and final TMDL documents, please see the **DEQ TMDL Web Page**. You will also find links to watershed groups and other water quality information pages.

See **Frequently Asked Questions** for information on navigating this site.
You may also visit the **What is a TMDL** page for a brief description of the TMDL process.

This site is maintained by DEQ's Water Quality Planning Bureau. Please contact the Bureau if you would like additional information regarding this site or

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Thompson
Upper Clark Fork Phase 2

Yaak TMDL Planning Area

last edited by Jordan Tollefson 2 days ago Page history

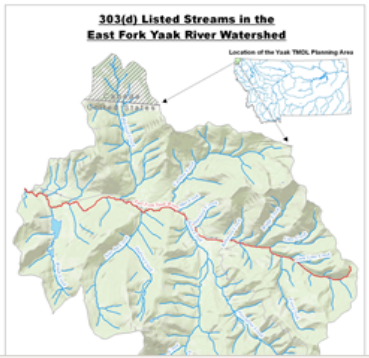
Yaak Nutrients TMDL Project

Project Documents **Project Outreach**

Introduction

The Yaak nutrients TMDL project includes one stream, the East Fork Yaak River. The East Fork Yaak River is impaired for nitrate+nitrite and a TMDL for the East Fork Yaak River is currently under development. In 2008, sediment TMDLs were completed for three streams in the Yaak River watershed to address sediment impairments on Seventeenmile Creek, Lap Creek, and the South Fork Yaak River. That document can be found here: Yaak River Watershed Sediment Total Maximum Daily Loads. The purpose of the East Fork Yaak River Nutrient Total Maximum Daily Loads document is to address the nutrient impaired waterbody (East Fork Yaak River) in the Yaak watershed.

The East Fork Yaak River watershed is located in Lincoln County, Montana. Its headwaters are located in the Purcell Mountains west of Lake Koocanusa, and from the headwaters the stream flows westward 14.6 miles to its confluence with the Yaak River **(Figure 1)**. The East Fork Yaak River watershed is composed of two 6th order subwatersheds: Basin Creek (170101030102), and East Fork Yaak River (170101030103). These fall within the larger Upper Yaak River 5th order watershed (1701010301), and the Yaak 4th order subbasin (17010103). The Yaak subbasin is located within the Kootenai 3rd order basin (170101) and the Kootenai-Pend Oreille-Spokane 2nd order subregion (1701), which is ultimately part of the Pacific Northwest 1st order Region (17). The East Fork Yaak River is the only impaired waterbody within the two 6th order subwatersheds that encompass its watershed on the 303(d) list **(Figure 2)**.



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Beaverhead - Jefferson Rivers Temperature

Bitterroot

Blackfoot Watershed

Central Clark Fork Tributaries

Clark Fork River-Silver Bow Creek Metals

Flathead

Kootenai - Fisher

Otter Creek

Thompson

Upper Clark Fork Phase 2

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Montana Department of Environmental Quality

What's New at DEQ

- Flood Information
- DEQ is seeking public comment on the Proposed Plan for the Missoula White Pine Sash Facility
- DEQ is seeking comments on the Draft Upper Clark Fork Phase 2 Sediment and Nutrients TMDLs and Framework Water Quality Improvement Plan
- DEQ is seeking comments on the Draft Addendum to the Upper Clark Fork River Tributaries Sediment, Metals, and Temperature TMDLs and Framework for Water Quality Restoration
- DEQ is seeking comments on the Draft 2014 Water Quality Integrated Report
- DEQ is seeking comments on the Silver Bow Creek and Clark Fork River Metals TMDLs
- MUST Newsletter Winter 2014 now available

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Welcome to DEQ's website

Director Tracy Stone-Manning

Our Mission
Goals & Objectives
Director's Website

Featured Links

Otter Creek Project

UBMC Virtual Tour

Upper Blackfoot Mining Complex Virtual Tour


Questions?